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Interactive Health Information Web Services for Business Settings

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Abstract

With the increase in the cost of healthcare many business in the United States are becoming self-insured or relying on managed healthcare organizations to provide healthcare. Employee wellness programs are playing a more pivotal role in the healthcare strategies of medium size to large size business. On average, according to the surveys, these companies spend $40 per employee per year on wellness programs. This research summarizes the needs to provide interactive health information services to complement employee wellness program of business in the US, and describes the procedures of developing health information kiosks.

Interactive Health Information Web Services for Business Settings

A Graduate Research Paper

Submitted to the

Division of Communication and Training Technology

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Master of Arts

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By
Nadezhda Soloukhina

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We are living in an age when information

must be up-to-the-minute, credible and valuable to

the health information customer.

Mr.Green, President of Avalon Group, Inc.

Introduction

With the increase in the cost of healthcare many business in the United States

are becoming self-insured or relying on managed healthcare organizations to

provide healthcare. Employee wellness programs are playing a more pivotal role

in the healthcare strategies of medium size to large size business. On average,

according to the surveys, these companies spend $40 per employee per year on

wellness programs. This research summarizes the needs to provide interactive

health information services to complement employee wellness program of

business in the US, and describes the procedures of developing health information

kiosks.

Rationale

This project is focused on the need for developing a health information kiosk

for business settings, which can be considered to be a part of the employee

wellness program. It can help the companies reduce the medical bills and increase

productivity. The rationale and evidence for these claims will be explained in this

section.

An employee wellness program may include providing health information, providing health facilities, and encouraging healthy behavior. Health information can be provided in the source of booklets, videos, software, and Internet software. Health promotion programs are becoming more popular and attract a lot of attention from big corporations and small companies. Health facilities may include an exercise gym for employees or shower facilities so they can take a shower after they run or jog during breaks. To encourage healthy behavior, many companies include policies prohibiting smoking and pay for the fees or a portion of the fees for health clubs.

Medical research and surveys indicate that people across the US are demanding more information about their health care and are becoming more involved in making decisions about their health care. This has created a demand for easy-to-understand health information.

The surveys also point to the fact that companies' administrations are interested in having healthier employees. Healthy employees help the company's bottom lines in two ways:

1. When employees are healthier, absenteeism and taking sick days off decrease. It is estimated that companies in the US lose $4 billion just on sickness related to low back pain.

2. Healthier employees imply lower medical bills, which helps keep a check on the rising medical cost and the resulting rise in health

insurance. This is particularly true for medium to large size companies who often self-insure or use HMO services.

Health education to employees also involves educating the employees about their health insurance and services. Good communication and education programs that explain these services help in two ways:

1. They help recruit and attract qualified candidates by explaining in details the advantages and the limitations of the company's health plans.

2. They help save time of the human resource staff which can direct employees to reliable up-to-date sources of information regarding their health insurance instead of relying on personnel to find and explain this information.

There is obviously a need to provide people with an opportunity to have access to the information about their health and about the ways to improve it. Developing health information kiosks is one of the ways to make people healthier and business settings more successful. This paper is intended to analyze the benefits of the medical information kiosks and the opportunities their development can provide for people of different professions and different societies.

Methodology

In the process of working on the paper different sources of information were identified and located. Different issues related to development of health information kiosks and their importance for business settings and society in general were addressed. Different points of view on the need for medical information kiosks, their benefits, advantages and disadvantages were covered.

Knowing how often we have to deal with technological and medical innovations, the most recent publications and Internet resources were used to address the issues of this research paper. The majority of information for this research was found on the Internet. A lot of companies, business and medical, had information related to medical information kiosks on the Web. Many of them participated in different surveys, researches, discussions and conferences. They also had many publications available either on their sites or had references to the printed materials.

Different databases were used to locate information, which describes different issues related to development of health information kiosks. One of the main objectives was also trying to find information which would address the same issues from different prospective. InfoTrac, Lexis-Nexis, ERIC, MLA Directory of Periodicals databases were used to find as much information as possible to present reliable information. Mostly, only information supported by real facts of successful use of medical kiosks is presented in this research.

Numerous resources proved that the need and interest for the medical information kiosks are growing. Businesses and medical personnel realize all the benefits, which can be provided by the kiosks to the employees and patients. Surveys and researches, without any doubt, support the conclusions, mentioned above.

In the following section evidence of the need for the medical information kiosks will be presented, and different ideas related to this issue will be summarized.

Analysis And Discussion

Barbara Grady (Grady, 2000) in her article was trying to emphasize the importance of providing health information at work places. She was analyzing different ways to deliver this information to the people who need it. From her point of view productivity and cost control are in a close relationship with the workers' health. Her research and its results are a proof of the fact that people are more productive if they are healthy. Her research was primarily based on analyzing the influence of personal-health management sites on people's health. She was pointing to the fact that users of those sites could improve their health by following the sites' suggestions and recommendations.

Online health and wellness management can provide a lot of benefits to the workers. The Websites offer advice ranging from posture and nutrition tips to research articles to online consultation with medical professionals. According to Grady (Grady, 2000), the new services exploit the convergence of several Internet and health care market trends: heightening consumer demand for health-related information, rising health care costs, an explosion of corporate intranets, and advancements in Web-based personalization technology. Dr. Stan Bernard, an e-health business consultant with Bernard Associates in Neshanic Station, is also emphasizing a tremendous interest in getting health care information from the Internet, which can provide specific, tailored information based on a patient's particular medical needs. Grady's research is also proving that employers and

insurers are very interested in healthier constituents and that's why are willing to pay for the services provided by the tailored, interactive sites. Thought it may be easily affordable for large companies it may be potentially prohibitive for small ones.

Health Promotion

Many articles have covered the issue of importance of health promotion. And there is a very good explanation for it. People want to be healthy all their lives. For most of people, good health comes easier when they are younger, as they grow older they have to work harder for it. Changes, associated with aging, are inevitable; disease and disability are not. It's important to learn how to maintain good health, especially throughout our later years. It is never too late-one can benefit from improved health habits at any age. With this in mind many companies are trying to take better care of their employees by implementing different health promotion programs.

According to American Journal of Health Promotion, "health promotion is the science and art of helping people change their lifestyle to move toward a state of optimal health. Optimal health is defined as a balance of physical, emotional, social, spiritual, and intellectual health. Lifestyle change can be facilitated through a combination of efforts to enhance awareness, change behavior and create environments that support good health practices. Of the three, supportive

environments will probably have the greatest impact in producing lasting change." (*American Journal of Health Promotion*, 1989)

The World Health Organization (WHO) defined health promotion as "the process of enabling individuals and communities to increase control over the determinants of health and thereby improve their health. It has come to represent a unifying concept for those who recognize the basic need for change in both the ways and conditions of living in order to promote health. Health promotion represents a mediating strategy between people and their environments, synthesizing personal choice and social responsibility in health to create a healthier future." (Kia, 1997)

The researchers turned to different sources of information to identify the main principles of health promotion. Health promotion "works with people not on them; starts and ends with the local community; is directed to the underlying as well as immediate causes of health; balances concern with the individual and the environment; emphasizes the positive dimensions of health; concerns and should involve all sectors of society and the environment." (Kia, 1997)

According to Richard Street (Street, 1995), "health promotion is the process of supporting people to increase control over the factors that influence their health and quality of life. An important characteristic of health promotion is its focus on groups of people, either the whole population or specific subgroups. It places emphasis on changing the environment to enable behavior to change. Health

promotion draws upon principles of: social change, physical change, policy

development, empowerment, community participation, equity and health,

accountability, building partnerships and alliances between groups"

Traditional Approach

For a long period of time companies have relied on printed materials to

provide wellness education materials to employees. Two of the largest publishers

in this field are Krames and Shaney. They have published a lot of wellness and

health promotion materials which are later used by the companies. Usually it is

the Human Resource Management personnel who is responsible for providing

health promotion and wellness information to patients. According to numerous

surveys (Patient Education Institute, 1999), investigation different methods of

providing health information at the workplaces, many companies may provide

videotapes. However, according to specialists, these are significantly more

expensive and have been more devoted to mandatory OSHA training and

corporate compliance materials (e.g sexual harassment.). Some of the companies

prefer to provide information about the health plans in the form of different

several booklets that are difficult to search.

Computer-Based Solutions

There is no doubt that traditional ways of providing health information, even

if they have many positive sites, also have a lot of limitations which can restrict

people from any-time, any-place access to the information they need. That's why

nowadays people are so much talking about computer-based solutions in accessing any type of information.

Computer software can organize wellness materials and health plan booklets offered to employees in searchable computer databases and easy dedicated programs.

The advantages of interactive health information, identified by Patient Education Institute (Patient Education Institute, 1999) as well as other companies specializing in the development of medical kiosks, are several, mainly:

1. Engages the user by asking questions and pacing learning
2. Thorough and automatic documentation of usage and users' responses.
3. Using multimedia to emphasize multi-sensory learning.
4. Using adaptive instruction to target the widest section of the population.
5. Cheap cost of production of thousand copies when compared to print.

There could also be some difficulties and problems, that have to be taken into consideration when we are talking about computer-based ways of providing health information. Different surveys (Kiosk Organization, 1998) indicated the following problems with CD-ROM based software solution based on CD-ROM:

1. Distributing the materials to the company's human resource department.
2. Getting employees to visit and use the computers where this software is installed.
3. Updating the information through diskettes, and CD-ROM.

4. Evaluating the usefulness of the system in terms of usage and time employee satisfaction.

Internet Solution

Health Information can also be provided through the Internet which nowadays is becoming more and more popular and convenient way to provide and access information. Besides, the Internet solution can present a solution to the above obstacles. Those solutions, as indicated by the specialists (Patient Education Institute, 1999), could be:

1. Web-based program could be immediately deployed on a server to be accessible to all human resource personnel and all employees.

2. Employees can receive the information they need on any Web browser, which could be on their work or home computer.

3. Updating information is instantaneous nationwide as the files on the server are updated.

4. Data is automatically collected regarding usage, which can be used for tracking the usefulness of the system. Surveys could be included to track and analyze users' satisfaction with the system.

Internet Opportunities

According to the companies (Patient Education Institute, 1999) providing their clients with health information on the Internet (E.g.: Patient Education Institute,

<u>http://www.patient-education.com</u>), a Web-based system for delivering health information presents several opportunities to companies:

1. Documentation of training. The system could be used to document that assigned training and education has occurred.

2. Feedback and surveying. The system could be used to track employee satisfaction.

3. Promoting benefits. Banners in the Web-site could be used to display information promoting the company and its benefits, culture, and future prospects.

4. Communication Boards. The system could be used to display messages to employees regarding new features in the wellness programs, sport events, etc.

<u>Interactive Technology</u>

In one of the chapters of his book, Health Promotion and Interactive Technology (Street, 1995), Richard Street is also addressing the issue of benefits of the opportunity to provide health information through the network and Internet. From his point of view, use of interactive technology seems appropriate and appealing. He doesn't think that a brochure, videotape, telephone, or even a professional consultation could be as versatile or as efficient a means of providing

such a variety of health information and services, that could be provided by means of the interactive technologies.

In the same chapter, he is providing the definition of interactive technology. According to this definition, "interactive technology is computer-based media that enable users to access information and services of interest, control how the information is presented, and respond to information and messages in the mediated environment. It could be answering questions, sending messages, receiving feedback or a response to previous actions." (Street, 1995)

Richard Street (Street, 1995) identified several types of computer applications pertinent to health promotion and patient education. The first one is providing an information environment so that a user can learn about a health topic he/she is interested in. The primary assumption here is the link between enhancement of knowledge and improvement in health. The unique aspect of interactive technology in this case is its ability to promote active learning, information seeking, and individualized knowledge by allowing users to select information on topics of interest, access multiple modes of information such as video demonstration, stories, statistics, and direct their own path through the program. In addition to learning, these programs can accomplish other objectives. They can reduce the user's anxiety about a condition or treatment and motivate the user to enact certain behaviors (E.g., changing dietary habits, quitting smoking).

As it is indicated by Richard Street (Street, 1995), interactive technology also can provide simulation environments for problem-solving and practicing disease-management skills. These simulation environments attempt to represent lifelike situations and experiences. With multimedia technology, these simulations can be produces in a very interesting, and lifelike manner. Theoretically, the importance of a simulation environment in promoting health is based on its potential to act as a powerful source of self-efficacy and to offer opportunities for practicing problem-solving skills. Thus, according to Street, simulation environments have the potential to personalize the experience, emphasize individual responsibility, and promote internalization of the knowledge and application of skills.

Another application of interactive technology, which has been also been addressed by Richard Street, is the creation of computer networks that enable the users to access other people and computers in the network. By doing this, they can exchange messages with other people linked to the system, solicit medical advice and information from experts, and access medical libraries and other databases in the system or on the World Wide Web.

Basing on the information above, it is easy to make a conclusion that the potential advantage of computer networks is in the fact that they offer a means for providing, within a single system, a variety of health-related resources, which include information, interaction with providers, social support, and decision support.

Rajiv Rimal and June Flora in the article "Interactive Technology Attributes in Health Promotion" (Rimal & Flora, 1997), addressed the issue of importance of interactive technologies in health promotion as well. They both predicted even more extensive use of technology attributes in health promotion. In their article they focused on effectiveness of various attributes of interactive technologies in health promotion. The authors' main assumption is that, although interactive technologies share many properties with other traditional media, their comparative advantage is in their ability to combine important features from various media into an integrated unit. This integration, without any doubt, offers unique advantages and opportunities for health promotion. According to Rimal and Flora, attributes of interactive technologies will definitely make a significant impact on health promotion efforts. One of the most important advantages of interactive technologies, described in the article, is interactivity, which comprises two dimensions: responsiveness and user control. The authors emphasized the importance of this attribute by conceptualizing interactivity as a particular case of feedback that occurs in real time. By this they point to the fact that interactivity cannot occur without feedback, but feedback can occur independent of interactivity, depending mostly on the amount of time required for the dual exchange of information. The greater the amount of time required for contingent responses to user actions, the less the interactivity of the system. Thus, a computer network, that links users with health information providers or other users, can

serve as an excellent source of feedback because experts or other users can transmit their assessments and suggestions back to the user.

Mr. Ronald Green (American Association of Retired Persons, 1995), President of Avalon Group, Inc., a Nevada corporation developing medical kiosks, commented that "We are living in an age when information must be up-to-the-minute, credible and valuable to the health information consumer." He also pointed to the fact that many companies today intend to make use of new media such as touch-screen interactive kiosks and the Internet as well as traditional media such as print, radio, and television to provide health and wellness information to people where they work, where they live, where they shop and even where they receive their health care.

One of the most advanced ways to present medical information by means of technology is a medical information kiosk. According to the companies supporting the idea of providing health information on the Internet (Patient Education Institute, 1999), kiosks are designed to empower consumers to make better decisions about their health care. There is no doubt that helping consumers to take control of their health care has proven to be an effective way to improve health status and control health care costs. Medical kiosks can provide health care decision-support services that lower the cost of medical care while improving patients' health and their satisfaction with their health plan.

Vic Strecher (*Health Information*, 1998) is a professor of Public Health at the University of Michigan. Last year, he launched a program that placed computerized health kiosks in more than 100 schools, libraries and community centers. The kiosks resemble televisions with channels devoted to topics such as smoking, breast cancer detection and bike safety. After answering a series of questions on a touch screen, users are presented with personalized plans for achieving health goals, such as quitting smoking for example.

According to Stretcher (*Health Information*, 1998), each month, more than 10,000 people use the kiosks. In the coming decade, he predicts that greater access to health information through technology may have as significant an influence on our medical system as health care reform. Strecher says the number of people who turn to the Internet for health information is growing faster than suburbia in the 1950s. Good Internet sites help patients become more informed and provide new emotional outlets, such as online support groups. But the quality of sites varies widely. A recent survey of more than 40,000 health sites revealed that many contain significant inaccuracies. Rating systems and other techniques are now being developed to deal with these problems.

To provide an example (*Health Information*, 1998), Strecher had a small child using the smoking channel. And there was this little button called "the scare me button." "It's a pretty disgusting button, according to Strecher," - it shows these people who are dead or dying as a result of smoking." The boy left without saying

a word. He brought his mother who smoked back a few hours later. He said, "Mom press that channel and learn how to quit." Sure enough she did. Over 50 percent of the users of the health information kiosks are children and that's pretty exciting.

Dr. Van Houten, a specialist actively involved in development of health information kiosks, indicates that "if you educate patients, they are more likely to comply with treatment recommendations and communicate problems to the physicians, reducing the potential for malpractice problems and increasing the likelihood of recovery." (*I-Mac with I-Touch for the Medical Market*, 2000) According to Van Houten, "any tool that helps communicate better with the patients or other people, who need health related information, helps reduce the cost of treatment and increases the benefits of the care provided. By encouraging people to engage in the education process, medical kiosks developers pull them onto the team, which can be considered a critical element for the success of their recovery and welfare." (*I-Mac with I-Touch for the Medical Market*, 2000)

There is definitely a huge influence of information revolution on health care. Numerous surveys and researches support this conclusion.

C. Everett Coop said an interesting thing recently. He said in the Journal of the American Medical Association that "in the past he though Health Care reform would change the way doctors and other medical personnel communicates with

patients. Now, he thinks with the information technology revolution, the way they communicate is going to change health care reform." (*Health Information*, 1998)

The next section will present information about the X-Plain system, which is another step in changing the ways of interaction between the people who need medical care and those who can provide it.

The X-Plain System

According to the specialists from the Patient Education Institute (Patient Education Institute, 1999), *X-Plain* is a computer-based patient information system used to inform patients and their families about their diagnoses and treatments. *X-Plain* informs patients, documents patient education, and prints customized patient education handouts.

X-Plain touch-screen kiosks and CD-ROMs have been implemented nationwide in physicians' offices, clinics, and hospitals since 1995. The following section describes the attributes of X-Plain that have made this product successful in healthcare settings. It also describes in what way these features should be modified to suit the corporate environment.

Didactic

As it is indicated by the specialists of the Patient Education Institute (Patient Education Institute, 1999), *X-Plain* simplifies complex medical information by displaying information presented at a low readability level, narrating all the text, and associating information on every page with a graphic or animation. *X-Plain* maintains the patient's attention by asking questions, giving feedback, and allowing the patient to review the presented materials at his or her own pace. This didactic design ensures better comprehension and retention of information, hence better medical outcomes and reduced liability.

X-Plain Corporate Wellness Program (XCWP) (Patient Education Institute, 1999) emphasizes the importance of graphics, animation, and interactive questions to attract the users' attention, motivate them, and pace instruction. According to Patient Education Institute's specialists patients are motivated to learn about their disease only after understanding that their diagnoses and treatments are very serious or even very critical. The employees of the business settings may be less motivated to learn; that is why the programs should be more interactive with more quiz-like programs that induce the user to answer questions and learn in the process of active participation.

Accessible

X-Plain targets the widest possible audience, including patients with low literacy levels and patients with no computer experience. This ensures that the majority, if not all of the patient population, can benefit from *X-Plain*.

X-Plain was designed primarily for the users with little or no computer experience in mind. It has also been assumed that the users could be functionally illiterate. In XCWP Patient Education Institute (Patient Education Institute, 1999) continues to target that audience (E.g., the janitors, service staff) and provide authentic related Web links to compute-literate users (e.g. referring users seeking information about diabetes to related Web sites).

The simple layout and language mean that customers do not have to worry about understanding fancy computer commands or operations. The search screen helps customers to quickly and easily find a specific topic.

One of the main advantages is that, unlike brochures which require a certain literacy level, X-Plain public kiosks can reach a wider audience. The user-friendly interface, which does not require any computer experience, ensures that everyone can benefit from the technology. "Features such as narrated text and translated modules make it possible for functionally illiterate, and non-English speaking users to be able to find all information they need while using X-Plain. Unlike passive watching of video or TV, the patient has to actively interact with X-Plain, which improves attention and motivation, and finally increases comprehension." (Patient Education Institute, 1999)

Comprehensive

X-Plain, which has been modified by Patient Education Institute, includes the largest library of interactive multimedia patient education programs. This allows multi-group practices and hospitals to share in the investment.

It's important to remember that to be attractive to corporate clients, XCWP has to continue to provide a good coverage of the topics of interest to the prospective clients. In Patient Education Institute case, such topics fall under the following categories:

1. Information about the health plan.

   This information comes from the health insurance company or the HMO. It includes information about the diseases covered in the plan, the participating health care providers, procedures for filing, etc. This information is compiled by the insurer and can be made available through the XCWP.

2. Information about health promotion topics.

   This section includes topics related to exercising, eating healthy, reducing weight, etc.

3. Information about preventing diseases.

   This information covers topics related to preventing back pain, carpal tunnel syndrome, and back injuries from incorrect lifting. Some of this material could be made mandatory for employees involved in activities that may lead to such injuries.

4. Information about disease conditions.

   It includes health education materials regarding specific topics. These topics could be found with a help of search engines or could be displayed as the employee's search for a health care provider regarding a certain condition or symptom he or she has. For example, if the employee uses the system to search for heart doctors, whose assistance is covered by the plan, in addition to the name of the provider, the system would display the

titles of health information topics related to angina, congestive heart

failure. They could also include such topics as living with a healthy heart,

about your heart pain, etc.

Customizable

Another advantage of X-Plain (Patient Education Institute, 1999) can be

expressed by the fact that its content is customizable. It is usually of a big benefit

to the hospitals and clinics. A corporate client may decide, for example, to

customize the page in the module "Preventing Carpal Tunnel Syndrome", so that

it includes the message "Ask your supervisor about the screen saver reminding

you to rest your wrist when you type continuously without resting your hands."

Documented

X-Plain also thoroughly documents patient education. For hospitals, this

feature helps to meet the standards of the Joint Commission on the Accreditation

of Healthcare Organizations. For clinics, this documentation helps to reduce

medical malpractice liability (some medical malpractice companies provide

discounts to physicians that implement *X-Plain*).

According to Patient Education Institute personnel (Patient Education

Institute, 1999), the documentation in XWEP could be used to:

1. Ensure that mandatory training has been completed.

2. Track and analyze the system usage in order to justify its cost.

3. Survey employees.

<u>Assigned Training</u>

As it is indicated by the specialists developing health information kiosks, *X-Plain* online "allows healthcare providers to "prescribe" health information to be reviewed by patients and their families at home by using a Web browser or WebTV. The healthcare provider, in this case, gives patients a username and password. When the patient logs in at home or at the library, he/she accesses a menu of health education information that has been prescribed or recommended by his/her healthcare providers." (Patient Education Institute, 1999)

This feature of XCWP could be used to assign training or educational courses for each of the employees and can be completed anywhere and anytime. For example, the materials the company distributes on sexual harassment could be added to the list of topics available in the system and assigned to the employees to review as a part of their mandatory training or orientation after hiring. In this aspect *XCWP* can accommodate existing employees' materials and integrate this information into the company's existing Web site.

<u>Other Benefits</u>

When implemented in clinic waiting rooms, "X-Plain public kiosks decrease the time healthcare providers have to spend with patients to discuss standard medical information." (Patient Education Institute, 1999) When patients in a waiting room review X-Plain modules related to their medical conditions before the clinical visit, patients come to the consultation session with a better

understanding of such standard information as anatomy, causes of the disease, and treatment options.

Patients usually have to wait for a certain period of time in the waiting room or lobby before they can see their healthcare providers or while waiting for laboratory tests, radiology results, or for the physician to see an emergency case. It could be an ideal time for the patients to learn about their conditions and the ways to manage their own health in a better way.

Delivery options

As it is suggested by Patient Education Institute (Patient Education Institute, 1999), the XCWP could be delivered in four different products based on the need of the institution regarding the delivery system and computer hardware.

Web Site

XCWP could be run from a server that hosts the modules (content), the SQL databases (delivery system), and tracking databases (collected data).

Stand-Alone

"A medium-sized company may be interested in a stand-alone version of the SCWP. This system would run from files on the hard disk of local computers and not from a server. The interface would be designed in such a way so that it could be operated with a mouse." (Patient Education Institute, 1999)

Kiosk Stand Alone

The version of XCWP, provided by Patient Education Institute, uses an interface that allows users to operate the system by using with a help of a touch monitor. The software could run from a server or from the computer hard disk. Numerous surveys, held by the specialists of MicroTouch Solutions, Inc., the company manufacturing interactive kiosks, show that user-friendly touch-screens improve medical data input and retrieval. Besides, touch is "more cost-effective, because intuitive touch input reduces employees' training time. Touch is also more durable. Capacitive touch-screens are impervious to blood, fluids, grease,

dirt, dust, and scratches, and resistant to wear." (MicroTouch Solutions for the Health Care Industry, 2000)

Besides, intuitive touch interfaces are used in a variety of markets and applications to decrease training times, increase productivity, create higher quality services, and provide more information to the clients and patients.

Plus to this, when speed is essential, touch technology can offer major advantages. In the medical field, "touch-screens can increase the efficiency and accuracy of analytical instruments. The use of touch-screen technology definitely increases the productivity of providing patients with the necessary information and ensures a higher level of accuracy with minimal efforts. Touch eliminates the need for extensive training on complicated computerized systems, as it requires only that the equipment operator look and touch." (MicroTouch Solutions for the Health Care Industry, 2000) In addition, touch often proves a quicker, more precise mechanism of accessing information than a keyboard or mouth. Moreover, a touch-screen system usually provides customer satisfaction surveys and questionnaires, which helps to improve the quality of the provided information and technology itself.

Kiosk Web-Based

This system could be used in corporate lobbies and in the offices of human resource departments.

According to the surveys (Kiosk Organization, 1999), the kiosks could also be placed in quiet areas, like a hallway or corner, so employees can use them in relatively private atmosphere. People could use X-Plain Health Kiosks in clinic waiting rooms, hospital lobbies, drug stores, and malls. "X-Plain public kiosks could be customized on an individual basis, and be based on the needs and preferences of the healthcare institution." (Patient Education Institute, 1999) Hospital marketing personnel can be interested in implementing X-Plain health information kiosks in the hospital lobbies to inform patients about the services of the institutions, the credentials of the staff, and how to find their way to different area of the hospital. Patient Education Resource Centers is interested in implementing the health information kiosks to provide interactive health promotion programs at health fairs and at community health education programs.

For example, a kiosk for a waiting room in a surgery clinic, such as neuro-surgery, may include the following programs, organized in touch-screen menus:

- A standard off-the-shelf module titled "What Is Neuro-surgery?" introducing patients to different services provided by a neurosurgeon and basic information on the anatomy of the nervous system.
- Patient education modules about neck pain, back pain, carpal tunnel syndrome, brain tumors and aneurysms.

- Health promotion modules about living healthy, managing cholesterol, exercising, and reducing stress.

The owners of the kiosk decide which modules they want to make available on their public kiosk. Additional custom-developed programs might include:

- A customized program about the clinic, introducing its services, hours of operation, staff and their credentials, and emergency numbers.

- A patient satisfaction survey.

The kiosks are located and maintained on an Internet-based server, where users conduct transactions or obtain information at the kiosk. "The user is not faced with Netscape or Internet Explore; a proprietary or commercially available front-end "wrapper" can be used to hide the complexities of the popular browsers." (Patient Education Institute, 1999) The following features could also be included in the health information kiosk:

- Health calculators

- Easy physician search

- Health classes and event calendar

- Ability to accept e-mail requests from customers

- Handles promotions and registrations

- Ability to instantly update information at all kiosk locations

According to the extensive surveys (Perkins, Wright & Simnett, 1999), the number of USA and international companies, engaged in the development of Internet kiosks, is constantly growing. Many companies are struggling to succeed in this new industry. Some business models have succeeded splendidly, others suffered from a variety of reasons, which include poor planning and implementation, underfunding, ill-advised selection of hardware and software, external/unavoidable events, or rapidly changing technology.

There are many factors that have to be considered in the process of creating the kiosks. The Patient Education Institute's (Patient Education Institute, 1999) specialists emphasize the following factors:

- The types of applications and how the information is presented

- How easy/difficult the kiosk is to use and navigate; its robustness

- What benefit/value is derived and is the user likely to return

- How to attract customers, including multimedia, enclosure design and location

- The effectiveness of actual or touch screen keyboard

Experts predict that the worldwide market for the medical interactive kiosks will grow to more than $4 billion by 2002. According to the statistics provided by MicroTouch Solutions, Inc. (MicroTouch Solutions for the Health Care Industry, 2000), today, tens of thousands of kiosks are deployed around the world by

retailers, financial services firms, tourism and entertainment companies, Federal and local government agencies and more. The main reason for this popularity of the medical kiosks is the fact that they provide unmatched levels of uninterrupted, automated self-service transactions and public information to millions – 24 hours a day, 7 days a week.

According to statistics and market projections resulting from the extensive surveys, held by Summit Research Associates (Syynergy V, 1999), many companies are struggling to succeed in this new business. Some business models have succeeded splendidly; others suffered for a variety of reasons, including poor planning and implementation, underfunding, an ill-advised selection of hardware and software, external/unavoidable events, or rapidly changing technology.

Conclusion

As technology advances, doctors and hospitals are demanding more high-tech computer-aided equipment for better diagnosis and treatment of patients. Even in today's information revolution, getting timely and accurate information can still sometimes be frustrating.

Interactive technology, and medical information kiosks as a part of it, can provide the society with an opportunity to address health promotion issues in a better way. Information kiosks have become a practical and user-friendly way for members of the public to access data and any other health related information. Conveniently located for easy public access, the kiosks can save people from waiting in long lines and provide them with an opportunity for privacy and responsibility in learning about different diseases and following the recommendations of the specialists.

Numerous medical and business organizations admit that the health information kiosk is the ideal solution for providing general information and improving product awareness. The medical kiosks enhance customer loyalty and goodwill, ensure time efficient and effective patient counseling, improve staff knowledge, create customer focus, enhance staff credibility and consistency, provide information on numerous (it could be over 3000) health topics and also provide up-to-date health management advice.

All the collaborations, described in this paper, involve medical care, people's welfare and technology. These collaborations, without any doubt, enhance the practice of medicine, address determinants of health and support the achievement of health objectives. By working together on population-based strategies, medical and business settings can protect and promote community health, and can address underlying causes of some of the most pressing health problems people face – such as tobacco use, poor diet, inactivity, injuries, violence, etc. – and strengthen essential functions of public health.

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